

REMARKS

Applicant respectfully requests reconsideration and allowance in view of the foregoing amendments and the following remarks. Applicant notes that claims 1, 6 and 10 have been amended. Thus, claims 1-6, 8-13 and 16-17 are pending in the application.

Section 112 Rejections:

In the Office Action, claims 11, 12, 17 and 18 were rejected under 35 USC 112, first and second paragraphs, as failing to comply with the enablement requirement and for failing to particularly point out and distinctly claim the subject matter of the invention. In particular, the Office Action indicated that the specification failed to describe how the phased generator can "affect adaptive control of a plurality of phases of said plurality of stage by indicating that corresponding edges of the plurality of phases have terminated." Applicant notes that claims 11 and 17 have been amended to clarify the operation of the claimed phase generator in accordance with Section 112, first and second paragraphs. In this regard, Applicant points to page 3, line 29 to page 4, line 5 and page 6, lines 6-9, which further describe embodiments of the claimed invention. Therefore, in view of the foregoing amendments and remarks, Applicant respectfully requests that the Section 112, first and second paragraph, rejections with respect to claims 11, 12, 17 and 18 be withdrawn.

Section 102 Rejections:

In the Office Action, claims 11, 12, 17 and 18 were rejected under 35 USC 102(e) as being anticipated by Rao (US Patent No. 6,359,947).

With regard to independent claims 11 and 17, Applicant notes that these claims have been amended to recite that the phase generator uses the feedback signals to provide adaptive control over the timing of the charging of each charge storage device and the switching of each switching device such that the phase generator outputs the second control signal to switch the switching device of a particular stage to an on state only after the first feed back signal for the particular stage indicates termination of charging of the charge storage device of the particular stage. In contrast, Rao generally describes split clock buffers for a negative charge pump that pumps the original phases of a clock signal to a higher voltage level, delays the pumped phases of the clock signal so that phase relationships are preserved, and outputs the delayed, pumped phases to a negative charge pump. Applicant, accordingly, respectfully submits that Rao only controls the voltage levels of the phases of a charge pump, where the timing of the phases remains unchanged from the original clock signals. Figure 8; Col. 11, lines 17-20. Rao also

does not appear to provide first feedback signals that indicate a state of the storage capacitor and second feedback signals that indicate a state of switching transistors that are used to control the timing of the phases. As such, Applicant respectfully submits that Rao fails to teach or suggest a phase generator that uses the feedback signals to provide adaptive control over the timing of the charging of each charge storage device and the switching of each switching device such that the phase generator outputs the second control signal to switch the switching device of a particular stage to an on state only after the first feedback signal for the particular stage indicates termination of charging of the charge storage device of the particular stage, as recited in claims 11 and 17. Embodiments of claims 11 and 17 provide certain advantages over Rao by allowing the timing of the phase signals to be adjusted to compensate for delays caused by high loads of the charge pump, so that subsequent phases can be started later. Therefore, because Rao fails to teach or suggest claims 11 or 17, Applicant respectfully requests that the Section 102(e) rejections with respect to claims 11 and 17 and all claims dependent thereon be withdrawn.

Section 103 Rejections:

In the Office Action, claims 11, 12, 17 and 18 were rejected under 35 U.S.C. 103(a) as being Liu (US Patent No. 6,160,723) in view of Rao.

Applicant notes that the deficiencies of Rao were discussed above with respect to claims 11 and 17. Applicant respectfully submits that the addition of Liu fails to alleviate these deficiencies. In contrast, Liu generally describes a charge pump circuit that includes level shifters for threshold voltage cancellation and clock signal boosting. In this context, Liu suffers the same deficiencies as Rao. Specifically, Liu only adjusts the voltage level phase signals, not the timing of the phase signals. The timing of the phase signals described in Liu remain unchanged from CLK and inverted CLK signals. As such, Applicant respectfully submits that Liu similarly fails to teach or suggest a phase generator that uses the feedback signals to provide adaptive control over the timing of the charging of each charge storage device and the switching of each switching device such that the phase generator outputs the second control signal to switch the switching device of a particular stage to an on state only after the first feedback signal for the particular stage indicates termination of charging of the charge storage device of the particular stage, as recited in claims 11 and 17. Therefore, in view of the foregoing amendments and remarks, Applicant respectfully requests that the Section 103(a) rejections with respect to claims 11 and 17 and all claims dependent thereon be withdrawn.

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 11, 12, 17 and 18 are in condition for allowance. Applicant, accordingly, respectfully requests that a notice of allowance be issued with respect to claims 11, 12, 17 and 18.

Please charge any fees which may be required, except the issue fee, or credit any overpayment to Deposit Account No. 14-1270.

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Respectfully submitted,

By



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